



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/821,010	04/08/2004	Xuming Xiong	1014-SP215-US	9314

34456 7590 10/28/2008
LARSON NEWMAN ABEL POLANSKY & WHITE, LLP
5914 WEST COURTYARD DRIVE
SUITE 200
AUSTIN, TX 78730

EXAMINER

VIJAYAKUMAR, KALLAMBELLA M

ART UNIT	PAPER NUMBER
----------	--------------

1793

MAIL DATE	DELIVERY MODE
-----------	---------------

10/28/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/821,010	Applicant(s) XIONG ET AL.	
	Examiner KALLAMBELLA VIJAYAKUMAR	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 July 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-102 is/are pending in the application.
- 4a) Of the above claim(s) 89-102 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-88 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 April 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>04/26/2004; 02/09/2005; 09/08/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

- Applicant's election with traverse of Group-I, Claims 1-88 in the reply filed on 07/24/2008 is acknowledged. The traversal is on the ground(s) that the examination of all the claims is not believed to create undue burden on the USPTO and that the subject matter among the groups is not independent and distinct by statute.. This is not found persuasive because Applicants argument is noted, but fails to provide any documentation other than alleged argument. Applicants fail to show the process can not be used to make other distinctly different products as argued in the last office action mailed 06/24/2008.
 - Claims 89-102 withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim.
 - The requirement is still deemed proper and is therefore made FINAL.
- The examiner has considered the IDS filed 04/26/2004, 02/09/2005 and 09/08/2006.

Drawings

Drawings are objected to for the following reasons:

The drawing sheet with Fig- 8-9 is missing. Applicants alleging the submission of the missing drawings on April 8, 2004 in the response filed 01/13/2005 is noted. However, in response to missing drawings, applicants did not submit the replacement drawings. Applicants are requested to submit the missing drawings to complete the specification requirements.

Art Unit: 1793

Claim Rejections - 35 USC § 102

Claim Rejections - 35 USC § 103

- The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(c) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

- The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any

Art Unit: 1793

evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

1. Claims 1, 37-38, 40-41, 44-46, 50-51, 53-54, 56-57, 62-63, 65 and 85-87 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Savvides et al (WO 02-095084 as evidenced by US 2004/0168636).

Savvides teaches a method of depositing a buffer layer or film onto a surface of a substrate. The method includes providing the substrate in a controlled atmosphere and exposing the substrate to a vapor comprising a film forming species. While the substrate is exposed to the vapor, two or more ion beams are provided incident upon the surface of the substrate to assist formation of the film. The respective axes of incidence of the two or more ion beams are distinct and are selected and controlled in order to maintain the arrival rate ratio, maximize the deposition rate, and maximize the biaxial alignment of the layer so formed (Abstract; Fig-1a-1c; 2b). The spool to spool arrangement of the tape shows the traveling of the tape (72) along the axial direction (Fig 6). The sputtering ion guns provide the ions for deposition (70) as a film over a substrate. Ion guns (71) assist the deposition of the material and biaxial texturing of the layer with higher degree of biaxial alignment (Fig-6; P-0021). The first and second ion beams were symmetrically disposed at the normal of the surface at an incident angle of 50-60 degrees from the normal of the surface (P-0023). The ion beams were disposed at an angle of 55 degrees to the normal of the surface of the substrate (P-0026). The ions comprised of Ar, Kr or Xe containing small amount of Oxygen (P-0024-27). The FWHM of the article was not more than 20 degrees. The biaxially textured film thickness ranged from 200 nm to 500 nm or thicker with dense film

Art Unit: 1793

minimizing out-of-plane alignment (P-0037). The deposition rates were at least four times that of IBAD with single ion beam gun (P-0061 and 67). A superconductor was deposited epitaxially over the buffer layer (P-0027). Savvides further teaches forming buffer layer comprising several biaxial films of different compositions <inter layer>, a superconductor layer and a capping layer (P-0058). The deposition species were provided by physical vapor sources such as laser ablation, sputtering, and e-beam evaporation (P-0064; 0030; 0057-0067; Examples). The YSZ(111) and CeO₂(111) layers were deposited over the substrates (Ex 1 and 2). The superconducting article included YBCO/YSZ/hastelloy (0078, Ex-10; Fig-17). The buffer layers further included CeO₂/YSZ(001) (Fig-12A). The energy of the ion beam ranged from 100-500 ev (0008, examples). The nanometer sized grain sizes are anticipated over nanometer thick films. This meets the limitation of a deposit flux at an oblique incident angle being bombarded simultaneously with a ion beam forming a BITD and the deposition flux being parallel to the direction of biaxially- textured film. All the limitations of the instant claims are met.

The reference is anticipatory.

In the alternative that the disclosure by Savvides et al be insufficient to anticipate the instant claims, the instant claimed method steps nonetheless would have been obvious to a person of ordinary skilled in the art over the disclosure because the reference teaches each of the claimed ingredients within the structure and a method of making it, and it has the same common utility as superconductor tapes. The burden is upon the applicant to prove otherwise. In re Fitzgerald, 619 F.2d 67, 205 USPQ594 (CCPA 1980).

Art Unit: 1793

2. Claims 2-36, 39, 42-43, 47-49, 52, 55, 58-61, and 64 are rejected under 35 U.S.C. 103(a) as obvious over Savvides et al (WO 02-095084 as evidenced by US 2004/0168636).

The claims 39, 52, 64, and 83 recite the limitation of “preferably” which is a preferred/optional limitation, and the prior art will be applied to the broadest range, because claim scope is not limited by claim language that suggests or makes optional but does not require steps to be performed, or by claim language that does not limit a claim to a particular structure [MPEP 2111.04 [R-3]].

Further, the examiner makes of record that instant claims 40, 53, 65 and 84 recites a broad range of components followed by a series of narrow ranges. For examination purposes, the examiner asserts that the narrow ranges recited in instant claims 40, 53, 65 and 84 are merely exemplary ranges, and thus, the prior art will be applied against the broadest ranges recited in instant claims 40, 53, 65 and 84. Furthermore, the examiner suggests that applicant should delete the narrow ranges from instant claims 40, 53, 65 and 84, and add new dependent claims that recite the narrow ranges recited in instant claims 40, 53, 65 and 84.

The disclosure on the method of making the biaxially textured film and the superconductor article as set forth in rejection-1 is herein incorporated.

The prior art fails to teach the incident angle per claims 2 and 55; or the ranges of angles between the ion incident angle and the film normal per claims 3-4, 12-13, 19-21, 28-31, 42-43, 58-59 or the deposition rate per claims 5-6, 32-33, 47-48; ion energy per claims 7, 34-35, 49, 60-61; or the film thickness per claims 14, 32-33, 36; or ion to atom arrival ratio per claims 22-23, ; or mismatch per claims 39, 52 and 64.

Art Unit: 1793

However, Savvides teaches variants of the IBAD (0008) and attaining highest deposition rate with high degree of biaxial alignment (Abstract), and it has been well settled these are result effective variables that can be varied in DIBAD process controlling the deposition rate that can be optimized by a person of ordinary skilled in the art. See also *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) (prior art suggested proportional balancing to achieve desired results in the formation of an alloy).

Further prior art values for angles for the ion incidence and the film normal (55 degrees) (0026); ion energy of 100-500ev (0008), film thickness of 500 nm or greater (0037), and ion to atom arrival ratio of 0.05 (Ex-1, 0068) either lie inside or overlap with the instant claimed ranges for these values, and In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990)..Further surfaces biaxially textured by ions with (111), (001) or (110) planes oriented perpendicular to specific crystalline directions was well known at the time of the disclosure of the invention by the applicants (See Reade et al, US 6,809,066; Cl-10, Ln 33-38), and it would have been obvious to form biaxial film in 110 crystal direction per the claim-25.

3. Claims 66-84 and 88 are rejected under 35 U.S.C. 103(a) as obvious over Savvides et al (WO 02-095084 as evidenced by US 2004/0168636) in view of Reade et al (US 6,821,338).

The disclosure on the method of making the biaxially textured film and the superconductor article as set forth in rejections 1 and 2 is herein incorporated.

Art Unit: 1793

The prior art fails to teach the biaxially textured films of non-cubic layer-structured material as a buffer layer.

In the analogous art Reade et al teach biaxially oriented layer formed by oblique particle beam comprising MgO, RuO₂, CeO₂ and YSZ (Abstract, Cl-6, Ln 11-30) and forming a superconductor article.

It would have been obvious to a person of ordinary skilled in the art to substitute the YSZ or CeO₂ or MgO layer in the structure of Savvides with RuO₂ of Reade et al as functional equivalent with predictable result and reasonable expectation of success because Reade teaches them to be equivalents and the teachings are in the analogous art of superconductor tapes. With regard to characteristics in claims 66-67, the prior art composition and components processed therein are similar to that claimed by the applicants and they are expected to possess similar characteristics.

With regard to variables taught in the claims, Savvides teaches variants of the IBAD (0008) and attaining highest deposition rate with high degree of biaxial alignment (Abstract), and it has been well settled these are result effective variables that can be varied in DIBAD process controlling the deposition rate that can be optimized by a person of ordinary skilled in the art. See also *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) (prior art suggested proportional balancing to achieve desired results in the formation of an alloy).

Art Unit: 1793

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KALLAMBELLA VIJAYAKUMAR whose telephone number is (571)272-1324. The examiner can normally be reached on M-F 07-3.30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 5712721358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KMV/

October 25, 2008.

/Stuart Hendrickson/

Primary Examiner, Art Unit 1793